2019-01382 - Post-Doctoral Research Visit F/M Post-Doctorant F/H
Heterogeneous Data collection and processing for edge-based vehicular networks

Type de contrat : CDD de la fonction publique
Contrat renouvelable : Oui
Niveau de diplôme exigé : Thèse ou équivalent
Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle
The Inria Lille - Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Nord - Pas-de-Calais Region, the Inria Lille - Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners. The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

Contexte et atouts du poste
The INRIA FUN research group investigates solutions to enhance programmability, adaptability and reachability of FUN (Future Ubiquitous Networks) composed of RFID, wireless sensor and robot networks. Limited resources, high mobility and high security level evolving in distrusted environments characterize the objects that compose FUN. They communicate in a wireless way. To be operational and efficient, such networks have to follow some self-organizing rules. Indeed, components of FUN have to be able in a distributed and energy-efficient way to discover the network, self-deploy, communicate, self-structure in spite of their hardware constraints while adapting the environment in which adapting the environment in which they evolve. For additional information on the FUN research group, please see http://team.inria.fr/fun/

Mission confiée
Our project will focus on vehicular networks based on the exploitation of enhanced edge devices able to "treat" data originated from different and heterogeneous sources and through heterogeneous communication technologies. Keeping in mind the main requirements of Vehicular Networks applications, such as low-latency, energy-efficiency and real-time constraints, we will propose context-aware and adaptive mechanisms in order to implement smarter edge devices that are reactive to new situations. In the above-mentioned mechanisms, we will revise the role of Road Side Unit (RSU) that will be charged with new types of tasks (i.e. those related to the role of edge device).

The three main goals of HEAVE are as follow: 1) The treatment of different heterogeneous data by trying to homogenize them through a cross-platform approach [1][2]; 2) Reducing the sending of redundant data by applying advanced algorithms for correlated data (e.g. Bayesian approaches [3]); 3) Design and implementation of adaptive and context-aware mechanisms for new types of vehicular services and applications assisting the vehicle user by defining Quality of Services (QoS) metrics for prioritizing some specific applications.

The achievement of these three objectives will converge on the design of an advanced and versatile platform respecting a hierarchical architecture with vehicles/users as nodes, RSU as enhanced edge devices and cloud. To the best of our knowledge, HEAVE platform is the first vehicular solution based on a smart edge device integrating heterogeneous data sources treatment and communication protocols to reduce the vehicle consumption by ensuring at the same time the definition of QoS data flows.


Principales activités

- Design of an adaptive communication paradigm for edge based vehicular network
- Realize a survey of similar existing techniques
- Implementation of the designed solution

Compétences

- Knowledge in wireless networks and/or edge/fog architecture
- Skills in Simulation tools and development
- English speaking
- Autonomy
- Open minded
- Team working
- Capacity to write English reports and papers

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours)
- Access to vocational training
- Social security coverage

Rémunération

Net monthly salary (after taxes) : 2132.97€

Informations générales

- Thème/Domaine : Réseaux et télécommunications
  Système & réseaux (BAP E)
- Ville : Villeneuve d'Ascq
- Centre Inria : CRI Lille - Nord Europe
- Date de prise de fonction souhaitée : 2019-04-01
- Durée de contrat : 1 an
- Date limite pour postuler : 2019-09-30

Contacts

- Equipe Inria : FUN
- Recruteur :
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A propos d'Inria

Inria, l'institut national de recherche dédié aux sciences du numérique, promeut l'excellence scientifique et le transfert pour avoir le plus grand impact. Il emploie 2400 personnes. Ses 200 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3000 scientifiques pour relever les défis des sciences informatiques et mathématiques, souvent à l'interface d'autres disciplines. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 160 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

Consignes pour postuler

CV, motivation letter, list of publications, one or more letters of recommandation and a short research statement.

Sécurité défense :

Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

Politique de recrutement :

Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

Attention : Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.